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RELATIONSHIP OF PATIENT CHARACTERISTICS WITH THE SEVERITY OF COVID-19 IN HOSPITALIZED PATIENTS IN ROYAL PRIMA HOSPITAL MEDAN JANUARY- MARCH 2021

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Abstract
Coronavirus Disease 19 (COVID-19) is an infectious ailment as a consequence of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Symptoms that get up due to SARS-CoV-2 infection are the most common with in the form of fever, fatigue, and dry cough, similarly to some of the symptoms and symptoms that patients may also moreover experience, are headache, conjunctivitis, sore throat, diarrhea, loss of sense of smell and skin rash. Serious signs can also additionally consist of issue respiration or shortness of breath, chest pain, and issue speak me or moving. Covid-19 is split into numerous types, specifically asymptomatic, mild, moderate, severe, and crucial that have a courting with affected person traits. This has a look at is a retrospective cohort have a look at. The general quantity of samples become 372 affected person clinical facts with information taken with inside the shape of age, gender, blood pressure, weight, height, Hb, urea, creatinine, SGOT, SGPT, blood glucose, smoking records, hypertension, coronary heart attack, kidney disorders, and radiological results. The results of this study showed that there were several patient characteristics related to the severity of Covid-19 ($p<0.05$), namely Body Mass Index (BMI), urea, GFR, X-Ray Radiology examination, CT-Scan examination, and the patient's initial symptoms. On the other hand, other characteristics did not show an association with the severity of Covid-19 ($p>0.05$), namely: age, gender, blood pressure, creatinine, SGOT, SGPT, Hb, blood glucose, smoking history, history of hypertension, history of heart attack, and history of renal impairment.

Keywords: *Covid-19, comorbid disease, Covid-19 severity.*

Abstrak
Coronavirus Disease 19 (COVID-19) adalah penyakit menular yang disebabkan oleh Sindrom Pernafasan Akut Parah Coronavirus 2 (SARS-CoV-2). Gejala yang timbul akibat kontaminasi SARS-CoV-2 adalah yang paling umum berupa demam, kelelahan, dan batuk kering, serta beberapa gejala yang mungkin juga dialami penderita, yaitu sakit kepala, konjungtivitis, nyeri tenggorokan, diare, kehilangan indra penciuman dan ruam kulit.. Gejala serius yang dapat terjadi berupa kesulitan bernapas atau sesak napas, nyeri pada dada, dan kesulitan berbicara atau bergerak. Covid-19 dibedakan menjadi beberapa type yaitu tanpa gejala, ringan, sedang, berat, dan kritis yang memiliki hubungan dengan karakteristik pasien. Penelitian ini merupakan penelitian cohort retrospective. Jumlah sampel total berjumlah 372 rekam medis pasien dengan data yang diambil berupa usia, jenis kelamin, tekanan darah, berat badan, tinggi badan, Hb, ureum, kreatinin, SGOT, SGPT, KGD, riwayat merokok, hipertensi, serangan jantung, gangguan ginjal, dan hasil pemeriksaan radiologi. Pada hasil penelitian ini menunjukkan adanya beberapa karakteristik pasien yang berhubungan dengan derajat keparahan Covid-19 ($p<0.05$), yaitu Indeks Massa Tubuh (IMT), ureum, GFR, pemeriksaan Radiologi X-Ray, pemeriksaan CT-Scan, serta gejala awal pasien. Sebaliknya karakteristik lainnya tidak menunjukkan adanya hubungan dengan derajat keparahan Covid-19 ($p>0.05$), yaitu: umur, jenis kelamin, tekanan darah, kreatinin, SGOT, SGPT, Hb, KGD, riwayat merokok, riwayat hipertensi, riwayat serangan jantung, dan riwayat gangguan ginjal .

***Kata kunci**: Covid-19, penyakit komorbid, tingkat keparahan covid-19.*

INTRODUCTION

At December 2019, China said an infectious ailment because of the brand-new coronavirus. Initially this ailment regarded with instances of pneumonia of unknown purpose. On January 7, 2020, researchers succeeded in figuring out the reason of this pneumonia, namely Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), that's a brand-new version of the coronavirus. The disorder became tentatively named 2019 Novel Coronavirus (2019-nCoV), then on February 11, 2020, the World Health Organization (WHO) introduced a brand-new name, Coronavirus Disease (COVID-19).(2)

After infecting and inflicting the loss of life of lots of human beings in China, to unfold of the virus has reached Italy and different European nations in addition to the USA in growing numbers.(3) Judging from the rate of the transmission process, WHO declared Covid-19 a Public Health Emergency of International Concern (PHEIC) on January 30, 2020.(4) WHO stated 10,185,347 showed instances of Covid-19 with 503,862 deaths worldwide (Case Fatality Rate or CFR 4.9%) as of 30 June 2020.(5)

In Indonesia, Covid-19 became first stated on March 2, 2020, with 2 instances. Based on records on February 21, 2021, Indonesia recorded 1,278,653 positive instances of Covid-19 and 34,489 deaths because of Covid-19. Most cases occurred in the age range of 45-54 years and also the least occurred at the age of 0-5 years and the highest mortality rate was found in patients aged 55-64 years. As many as 51.5% of cases occur in men.(5)

The elderly and people with comorbidities have a higher danger of being infected with Covid-19 and experiencing severe or critical symptoms and having a high mortality rate. The Covid-19 death rate was most commonly associated with hypertension (43.8%), diabetes (25.7%) and cardiovascular disease (16.2%).(6) According to Shreya and Kalipada (2020), the high number of Covid-19 cases in men is caused by a high smoking habit compared to women. Researchers have shown that smoking can cause a person to suffer from severe Covid-19 disease. It was shown by the researchers that smoking can increase the expression of the SARS-CoV-2 receptor, ACE (Angiotensin Converting Enzyme 2) - a receptor that helps the entry of the Covid-19 virus into cells.(7)

Common symptoms of Covid-19 are fever, fatigue and a dry cough, as well as few of the symptoms that patients may experience are headache, pleurisy aspiration, sore throat, diarrhea, smell loss or odor and skin rash. Serious symptoms that can occur include difficulty breathing or shortness of breath, chest pain, and difficulty speaking or moving(8).

Clinical manifestations of Covid-19 patients a range of asymptomatic, mild symptoms, severe pneumonia, Acute Respiratory Distress Syndrome (ARDS), septicemia, shock of infection. Almost 80% of patients are feathery or moderate, 13.8% of patients are severe, and up to 6.1% of patients are in critical condition.(8)

Classification of the severity of the Covid-19 illness can be very essensial to determine the treatment of patients. Based on the medical signs and symptoms, Covid-19 can be labeled into four groups, in particular mild, moderate, severe, and critical.(9) Based on the signs and symptoms of the Covid-19 classification, it could be with inside the form of: (1) Asymptomatic (asymptomatic): Positive nucleic acid test for Covid-19, without clinical signs and regular chest imaging; (2) Mild type : Symptoms of acute higher respiration tract infection (fever, fatigue, muscle aches, cough, sore throat, runny nose, sneezing) or digestive signs and symptoms (nausea, vomiting, abdominal pain, diarrhea); (3) Moderate type: Pneumonia (often fever, cough) without overt hypoxemia, chest CT with lesions; (4) Severe type: Pneumonia with hypoxemia (SpO2 <92%); (5) Critical type : Acute respiratory distress syndrome (ARDS), viable shock, encephalopathy, myocardial injury, coronary heart failure, coagulation disease and acute kidney injury.(10)

RT-PCR (Reverse Transcription – Polymerase Chain Reaction) exam is a diagnostic take a test of nasal swab, tracheal aspirate or broncho alveolar lavage (BAL) specimens. The principal techniques for diagnosis are the gathering of upper respiratory samples or through nasopharyngeal and oropharyngeal swabs. The specificity of RT-PCR assay appears very high (predicted at 66-80%) even though fake positives might also additionally arise because of infected swabs, specially in asymptomatic patients.(3)

Radiographs play an essential position in detecting, grading, and treating Covid-19 patients. Computed Tomography (CT scan) imaging is taken into thought the best manner to find respiratory organ abnormalities, significantly with inside the first degrees of the disorder. In addition, non-stop CT

scans carried out at different intervals (three to seven days) also can effectively determine disorder progression (from the preliminary analysis to discharge).(11) A usual CT finding locating in a COVID-19 infected affected person is ground-glass opacities, particularly in the peripheral and lower lobes and bilateral multiple lobular and subsegmental regions of consolidation, particularly in ICU patients.(3)

METHODS

Participants / Subject / Population and Sample

The research design used was descriptive analysis with a retrospective cohort research method, where researchers collected patient medical records that occurred in the past to determine the severity of COVID-19. The research data sources used were exposures and variables during the follow-up period and the results of measurements during the follow-up period recorded in the medical records of the Royal Prima Hospital Medan. The sampling method used is the purposive sampling method, which is based on certain considerations from the researchers themselves.

Procedure and Data Analysis

After all data is obtained, data management will be carried out using a computer program SPSS version 26.0, and then the data will be analyzed by means of statistical descriptive proportion distribution. Furthermore, the data will be presented in the form of narratives, distribution tables.

Result

Distribution of patient proposals based on characteristics with severity of Covid-19

	Severity of COVID-19				
CHARACTERISTICS	**Currently**	**Heavy**	**Critical**	**Total**	***p* value**
Age (%)					0.394
<18	4 (22.2)	7 (38.9)	7 (38.9)	18 (100.0)	
18-59	95 (34.9)	87 (32.0)	90 (33.1)	272 (100.0)	
>59	27 (32.1)	21 (25.0)	36 (42.9)	84 (100.0)	
Gender					0.485
Male	68 (35.2)	54 (28.0)	71 (36.8)	193 (100.0)	
Woman	58 (32.0)	61 (33.7)	62 (34.3)	181 (100.0)	

Blood pressure (mmHg)					0.836
<120	122 (33.6)	111 (30.6)	130 (129.1)	363 (100.0)	
120-139	4(36.4)	4 (36.4)	3 (27.3)	11 (100.0)	
Body Mass Index					0.010
<18,5	0 (0.0)	10(71.4)	4 (28.6)	14 (100.0)	
18,5-22,9	27 (39.7)	17 (25.0)	24(35.3)	68 (100.0)	
23-24,9	11 (27.5)	16 (40.0)	13(32.5)	40 (100.0)	
25-29,9	75 (38.1)	54 (27.4)	68 (34.5)	197 (100.0)	
>30	13 (23.6)	18 (32.7)	24 (43.6)	55 (100)	
Ureum (mg/dl)					0.009
<15-38	110(33.6)	108 (33.0)	109 (33.3)	327 (100.0)	
>38	15 (33.3)	6 (13.3)	24 (53.3)	45 (100.0)	
Creatinin (mg/dl)					0.639
0,6-1,3	1 (50.0)	0 (0.0)	1 (50.0)	2 (100.0)	
>1,3	125	115	132	372 (100.0)	
Glomerulus Filtration Rate (GFR)					0.000
60-89	11 (11.2)	47 (48.0)	40 (40.8)	98 (100.0)	
45-59	44 (36.7)	53 (44.2)	23 (19.2)	120 (100.0)	
30-44	71 (52.6)	15 (48.0)	70 (55.5)	156 (100.0)	
SGOT					
Man					0.862
0-37	50 (35.5)	38 (27.0)	53 (37.6)	141 (100.0)	
> 37	18 (34.6)	16 (30.8)	18 (34.6)	52 (100.0)	
Woman					0.603
0-31	44 (33.1)	42 (31.6)	47 (35.3)	133 (100.0)	
> 31	14 (29.2)	19 (39.6)	15 (31.3)	48 (100.0)	
SGPT					
Man					0.368
12-25	27 (41.5)	15 (23.1)	23 (35.4)	65 (100.0)	
> 25	41 (32.0)	39 (30.5)	48 (37.5)	128 (100.0)	
Perempuan					0.309
14-59	18 (29.5)	18 (29.5)	25 (41.0)	61 (100.0)	

> 59	40 (33.3)	43 (35.8)	37 (30.8)	120 (100.0)	
HB					
Man					0.722
13,5-15,5	15 (36.6)	13 (31.7)	13 (31.7)	41 (100.0)	
< 13,5	53 (34.9)	41 (27.0)	58 (38.2)	152 (100.0)	
Woman					
<12,5	22 (29.7)	32 (43.2)	20 (27.0)	74 (100.0)	
12,5-14,5	36 (33.6)	29 (27.1)	42 (39.3)	107 (100.)	
Blood Sugar Level					0.642
< 200 mg/dl	100 (34.8)	88 (30.7)	99 (34.5)	287 (100.0)	
> 200 mg/dl	26 (29.9)	27 (31.0)	34 (39.1)	87 (100.0)	
Smoke					0.119
Yes	37 (28.7)	48 (37.2)	44 (34.1)	129 (100.0)	
No	89 (36.3)	67 (27.3)	89 (36.3)	245 (100.0)	
Hypertension					0.420
Yes	107 (34.7)	96 (31.2)	105 (34.1)	308 (100.0)	
No	19 (28.8)	19 (28.8)	28 (42.4)	66 (100.0)	
Heart attack					0.249
Yes	26 (42.6)	15 (24.6)	20 (32.8)	61 (100.0)	
No	100 (31.9)	100 (31.9)	113 (36.1)	313 (100.0)	
Kidney disorders					0.463
Yes	79(36.2)	65(29.8)	74(33.9)	218 (100.0)	
No	47(30.1)	50(32.1)	59(37.8)	156 (100.0)	
	52.6	48.0	55.5		
Symptoms during hospitalization					0.000
Fever	8(15.1)	13(24.5)	32(60.4)	53 (100.0)	
Cough with phlegm	30 (31.3)	21(21.9)	45(46.9)	96 (100.0)	
Cough without plegm	1(5.6)	17(94.4)	0(0.0)	18 (100.0)	
Out of breath	0(0.0)	11(64.7)	6(35.3)	17 (100.0)	
Sore throat	3(27.3)	0(0.0)	8(72.7)	11 (100.0)	
Loss of smell	15(33.3)	17(37.8)	13(28.9)	45 (100.0)	

Lost sense of taste	10(45.5)	0(0.0)	12(54.5)	22 (100.0)	
Decreased appetite	16(72.7)	3(13.6)	3(13.6)	22 (100.0)	
Nauseous	10(35.7)	18(64.3)	0(0.0)	28 (100.0)	
Throw up	0(0.0)	9(50.0)	9(50.0)	18 (100.0)	
Diarrhea	4(44.4)	0(0.0)	5(55.6)	9 (100.0)	
Headache	13(100.0)	0(0.0)	0 (0.0)	13 (100.0)	
Muscle ache	11(100.0)	0(0.0)	0(0.0)	11 (100.0)	
Weak	5(45.5)	6(54.5)	0(0.0)	11 (100.0)	
X-Ray					0.000
No abnormalities seen	2(11.8)	0(0.0)	15(88.2)	17 (100.0)	
Presence of bilateral pneumonia	109(41.9)	98(37.7)	53(20.4)	260 (100.0)	
Overview of bronchopneumonia	15(15.5)	17(17.5)	65(67.0)	97 (100.0)	
CT-Scan					0.000
No abnormalities	42(65.6)	13(20.3)	9(14.1)	64 (100.0)	
Presence of bilateral pneumonia	20(14.3)	45(32.1)	75(53.6)	140 (100.0)	
Bronchopneumonia picture	42 (45.2)	30(32.3)	21(22.6)	93 (100.0)	
Overview	22(28.6)	27(35.1)	28(36.4)	77 (100.0)	

Based on the table above, the researchers got the results that several characteristics had a relationship (P < 0.05) between Body Mass Index (BMI) (P = 0.010), urea (P = 0.009), GFR (P = 0.000), X-Ray Radiology examination (P = 0.000), CT-Scan examination (P = 0.000), and the patient's initial symptoms (P = 0.000) with the severity of COVID-19. On the other hand, other characteristics obtained a value (P> 0.05) found that there was no relationship between age (P = 0.394), gender (P = 0.48), blood pressure (P = 0.836), creatinine (P = 0.639), SGOT for male (P = 0.862) and female (P = 0.603), SGPT male (P = 0.368) and female (P = 0.90), male total Hb (P = 0.722) and female (P = 0.064), KGD (P = 0.642), history of smoking (P = 0.110), history of hypertension (P = 0.420), history of heart attack (P = 0.249), history of kidney disorders (P = 0.463) with severity of COVID-19 .

CONCLUSION AND SUGGESTION

Based on the outcome of research that has been carried out, it can be seen that in this study there was a relationship between Body Mass Index (BMI), urea levels, Glomerular Filtration Rate (GFR), X-Ray Radiology examination results, CT-scan results and the severity of Covid -19.

In this study, it was also found that there was no relationship between age, gender, creatinine levels, Serum Glutamic Oxaloacetic Transaminase (SGOT) levels, Serum Glutamic Pyruvic Transaminase (SGPT) levels, hemoglobin (Hb) levels, Blood Sugar Levels (KGD), history of smoking, hypertension, heart disease, kidney disorders with the severity of Covid-19.

Some suggestions that can be put forward in this research are as follows:

1. It is hoped that future researchers can further develop research such as changing the time span, adding special objectives, or changing research locations.
2. It is hoped that further researchers will add more samples so that they can collect more data on other comorbid and in more detail.
3. Medical records as a source of research data should be more complete in writing down all data to make it easier for researchers to find sources of information.
4. Researchers expect the public to continue to comply with health protocols by continuing to use masks, maintain distance, and wash hands and vaccinate.

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